

- 1 (canceled)
2. (amended) The composite coupling of claim 21 ~~1~~ and wherein the coupling further comprises:
means for sealing the pipes in a restrained joint to maintain a pressurized flow between the pipes through the restrained joint.
3. (original) The composite coupling of claim 2 and wherein the means for sealing the pipes includes providing a seal between each pipe and the interior surface of the coupling.
4. (canceled)
5. (canceled)
6. (amended) The composite coupling of claim 21 ~~1~~ and further comprising:
means to index a first pipe end so as to position a first complementary retainer groove coincident with the first retainer groove.
7. (original) The composite coupling of claim 6 and further comprising:
means to index a second pipe end so as to position a second complementary retainer groove coincident with the second retainer groove.
8. (original) The composite coupling of claim 7 and wherein the means to index the first complementary retainer groove with the first retainer groove is a pipe stop, the pipe stop limiting the depth of insertion of the first pipe into the first end of the composite coupling.
9. (original) The composite coupling of claim 7 and wherein the means to index the second complementary retainer groove with the second retainer groove is a pipe stop, the pipe stop limiting the depth of insertion of the second pipe into the second end of the composite coupling.

10. (canceled)

11. (canceled)

12. (canceled)

13. (canceled)

14. (amended) The composite coupling of claim 21 ~~-1-~~ and wherein the first port is tangential to the first retainer groove.

15. (amended) The composite coupling of claim 21 ~~-1-~~ and wherein the retainer grooves are circumferentially arranged about the axis of the cylinder.

16. (canceled)

17. (canceled)

18. (amended) ~~The~~ A composite coupling of claim 1 for use in assembling a restrained joint between a plurality of pipes having pipe ends and external complementary restraining grooves axially spaced from the pipe ends, the composite coupling comprising:

a cylindrical composite body, the cylindrical composite body defining an axis and having a first end, a second end, an exterior surface and an interior surface;

a first retainer groove in the interior of the coupling, the first retainer groove being axially spaced from the first end;

a first port, the first port communicating between the exterior surface and the first retainer groove;

a second retainer groove in the interior of the coupling, the second retainer groove being axially spaced from the second end;

a second port, the second port communicating between the exterior surface and the second retainer groove; and

wherein the cylindrical composite body comprises a plurality of concentrically arranged layers of wound filaments in a thermoset plastic matrix, each of the layers characterized by a winding angle opposing the winding angle of the adjoining layers and wherein the filaments in a first layer of the composite are disposed upon a winding angle of about +55 degrees relative to the cylindrical axis.

19. (original) The composite coupling of claim 18 and wherein the filaments in a second layer wound over the first layer are disposed upon a winding angle of about -55 degrees relative to the cylindrical axis.

20. (canceled)

21. (Amended) ~~The~~ A composite coupling of claim 1 for use in assembling a restrained joint between a plurality of pipes having pipe ends and external complementary restraining grooves axially spaced from the pipe ends, the composite coupling comprising:

a cylindrical composite body, the cylindrical composite body defining an axis and having a first end, a second end, an exterior surface and an interior surface;

a first retainer groove in the interior of the coupling, the first retainer groove being axially spaced from the first end;

a first port, the first port communicating between the exterior surface and the first retainer groove;

a second retainer groove in the interior of the coupling, the second retainer groove being axially spaced from the second end;

a second port, the second port communicating between the exterior surface and the second retainer groove; and

wherein the cylindrical composite body comprises a plurality of concentrically arranged layers of wound filaments in a thermoset plastic matrix, each of the layers characterized by a winding angle opposing the winding angle of the adjoining layers and wherein the winding angle is from 40 degrees to 65 degrees and the opposing winding angle is from -40 degrees to -65 degrees.

22. (amended) The composite coupling of claim 21 ~~-1-~~ and wherein the pipes to be coupled have an outer diameter of about 16 inches.
23. (amended) The composite coupling of claim 21 ~~-1-~~ and wherein the coupling has at least five layers of opposing windings.
24. (original) The composite coupling of claim 23 and wherein the coupling has seven or more layers of opposing windings.
25. (canceled)
26. (amended) The composite coupling of claim 21 ~~-1-~~ and wherein the filaments are glass filaments.
27. (canceled)
28. (amended) The composite coupling of claim 21 ~~-1-~~ and wherein the thermoset matrix is epoxy.
29. (original) The composite coupling of claim 6 and wherein the means for indexing is a snap ring.

30. (original) The composite coupling of claim 29 and wherein the snap ring is bonded to the interior surface.
31. (canceled)
32. (canceled)
33. (canceled)
34. (canceled)
35. (canceled)
36. (canceled)
37. (canceled)
38. (canceled)
39. (canceled)
40. (canceled)

- 41. (canceled)
- 42. (canceled)
- 43. (canceled)
- 44. (canceled)
- 45. (withdrawn)
- 46. (canceled)
- 47. (withdrawn)
- 48. (withdrawn)
- 49. (withdrawn)
- 50. (canceled)
- 51. (withdrawn)

52. (amended) A method of assembling a restrained joint comprising the steps of:
providing a filament-wound composite coupling having a first end with a first retaining groove and a first port communicating with the first retaining groove, and a second end with a second retaining groove and a second port communicating with the second retaining groove wherein the filament-wound composite coupling comprises a plurality of concentrically arranged layers of wound filaments in a thermoset plastic matrix, each of the layers characterized by a winding angle opposing the winding angle of the adjoining layers, and wherein the winding angle is from 40 degrees to 65 degrees and the opposing winding angle is from -40 degrees to -65 degrees ;
providing a first pipe with a first complementary retaining groove and a second pipe with a second complementary retaining groove;
providing a first flexible spline and a second flexible spline;
inserting the first pipe into the first end such that the first complementary retaining groove of the first pipe is coincident with the first retaining groove and subsequently inserting the first flexible spline through the first port and into at least a portion of the coincident first complementary retaining groove and first retaining groove so as to axially lock the first pipe to the coupling; and,
inserting the second pipe into the second end such that the second complementary retaining groove of the second pipe is coincident with the second retaining groove and subsequently inserting the second flexible spline through the second port and into at least a portion of the coincident second complementary retaining groove and second retaining groove so as to axially lock the second pipe to the coupling, thereby assembling a restrained joint.

53. (canceled)

54. (original) The method of claim 52 and wherein the filament-wound composite coupling further includes O-rings to seal the first and second pipes to the coupling.

55. (original) The method of claim 52 and wherein the coupling further includes means for indexing the first and second pipes to facilitate establishing coincident relationships for the complementary retaining grooves relative to the retaining grooves of the coupling.

56. (canceled)

57. (amended) A pipe system comprising:

a plurality of pipes, each of the pipes of the plurality having two ends and an outward directed complementary retainer groove associated with each end;

at least one filament-wound composite coupling, the coupling including two ends, two inwardly directed retaining grooves, each of the retaining grooves having a port communicating with the retaining groove and wherein the filament-wound composite coupling comprises a plurality of concentrically arranged layers of wound filaments in a thermoset plastic matrix, each of the layers characterized by a winding angle opposing the winding angle of the adjoining layers, and wherein the winding angle is from 40 degrees to 65 degrees and the opposing winding angle is from -40 degrees to -65 degrees ; and,

at least two flexible splines, each spline being insertable into one of the retaining grooves through the associated port to axially lock a pipe end to the coupling by retaining a coincident relationship between the complementary retaining groove and the retaining groove, thereby defining a restrained joint of the pipe system.

58. (canceled)

59. (canceled)

60. (withdrawn)

61. (withdrawn)

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